

BERPIKIR PERANCANGAN

DESIGN THINKING

Dr. Ing. Ilya F. Maharika, IAI

WEEK 8

PROGRAMMING

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program |'prō,gram |

noun

¹ a planned series of future events, items, or performances

programming |'prō,grami ng |

noun

¹ the action or process of writing computer programs.

- figurative predetermined behavior: men and women are the playthings of programming.

² the action or process of scheduling something, esp. radio or television programs: the programming of shows.

- radio or television programs that are scheduled or broadcast : the station is to expand its late-night programming.

Apple Dictionary

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Programming ...

Programming can be seen as an information processing system; it represents a source for a systematized process that provides a structured framework for accumulating, categorizing and classifying different types of knowledge necessary for design.

Ashraf Salama, SKILL-BASED- KNOWLEDGE -
BASED ARCHITECTURAL PEDAGOGIES: An
Argument for Creating Humane Environments, 7th Intl
Conference on Humane Habiate-ICHH-05 – The
International Association of Humane Habitat IAHH
Rizvi College of Architecture, Mumbai, India January
29-31, 2005,

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Architectural programming ...

... as the research and decision-making process that identifies the scope of work to be designed. Synonyms include "facility programming," "functional and operational requirements," and "scoping."

Architectural Programming
by Edith Cherry, FAIA, ASLA and John Petronis, AIA,
AICP available at http://www.wbdg.org/design/dd_archprogramming.php

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Architectural programming ...

The beginning stage of the architectural design process in which the relevant VALUES of the client, user(s), architect, and society are identified; important project GOALS are articulated; FACTS about the project are uncovered and facility NEEDS are made explicit.

Hershberger, 1995

Architectural programming ...

Programming is a systematic method of inquiry that delineates the context within which the designing must be done as well as defines the requirements that successful project must meet

Donna P. Duerk 1993 *Architectural Programming: Information Management for Design*

Architectural programming ...

Programming, as an analytical process, encourages decision-making through objective procedures rather than individual assumptions or personal preferences.

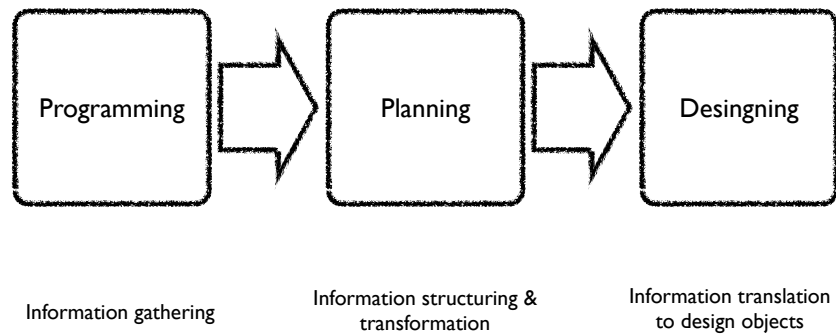
Effective programming depends on what types of knowledge are needed and on selecting the appropriate tools of obtaining and documenting such knowledge.

Programming is a process of investigating and developing information, and analyzing clients/users' needs and concerns.

Programming process involves serial and holistic modes of thinking about the design problem. It involves serial thinking because each step leads to another, culminating in space specification. It also involves holistic thinking because the sequence of the steps requires simultaneous tasks, repetitive cycles and feedback.

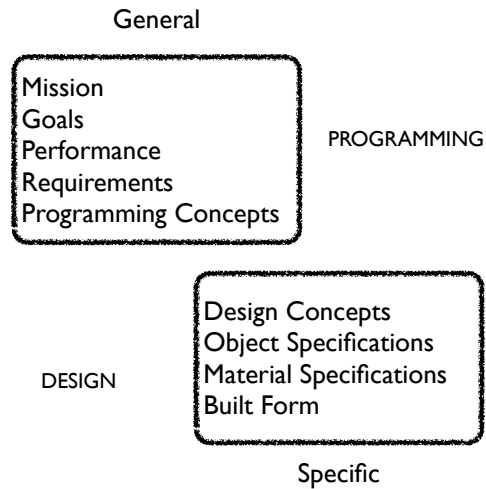
Sanoff, H. (1992). Integrating Programming, Evaluation, and Participation in Design. England: Avebury.
taken from <http://www.humiliationstudies.org/documents/SalamalCHH-05.pdf>

Position of architectural programming ...



Wade (1977) Architecture, Problems and Purpose, London: Wiley-Interscience

Position of architectural programming ...



Duerk, 1993 p. 14

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Position of architectural programming ...

1. Pre Design

Programming

2. Schematic Design

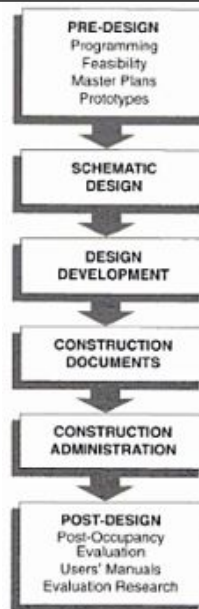
3. Design Development

4. Construction Documents

5. Construction Administration

6. Post Design

Post Occupancy Evaluation

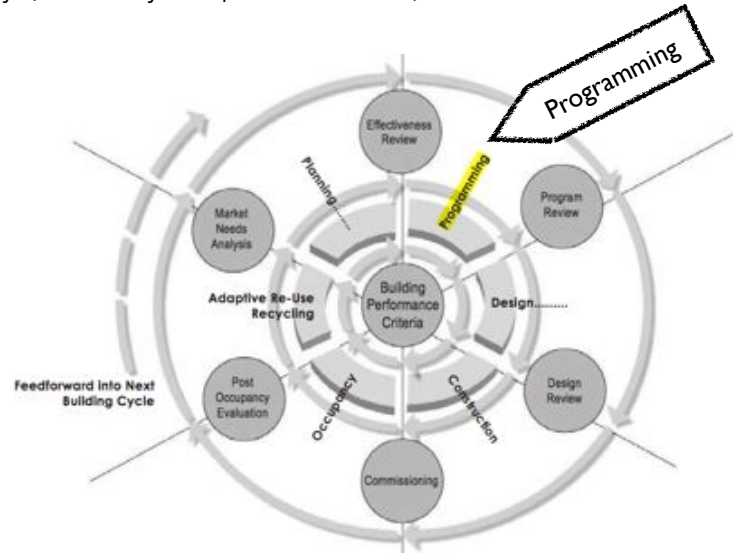


AIA Design Process

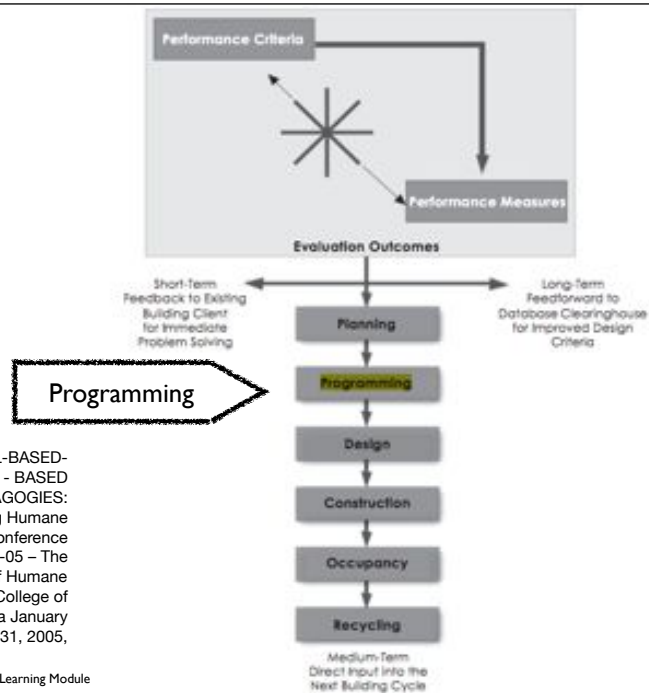
AIA Architectural Design Process (in Duerk 1993 p. 9)

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Wolfgang F.E. Preiser and Jack L. Nasar (2008) "Assessing Building Performance: Its Evolution from Post-Occupancy Evaluation" *Archnet-IJAR, International Journal of Architectural Research*, Vol. 2 - Issue 1-March.



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Steps of architectural programming ...

There are four distinct stages of programming that can be introduced in the studio. They are generic and apply to all programming activities:

1. Investigating the existing situation.
2. Defining needs and trends.
3. Generating solutions.
4. Resolving needs and resources, including selecting and documenting the design solution that is most direct and feasible.

Sanoff, H. (1992). Integrating Programming, Evaluation, and Participation in Design. England: Avebury.
taken from <http://www.humiliationstudies.org/documents/SalamalCHH-05.pdf>

Steps of architectural programming ...

1. Research the project type
2. Establish goals and objectives
3. Gather relevant information
4. Identify strategies
5. Determine quantitative requirements
6. Summarize the program



Architectural Programming
by Edith Cherry, FAIA, ASLA and John Petronis, AIA,
AICP available at http://www.wbdg.org/design/dd_archprogramming.php

Level of architectural programming ...

- **programming at the master planning level** is more strategic in nature—providing information to building owners to make decisions regarding current and projected space needs and rough budgeting for implementation.
- **Programming at the individual project level** provides specific, detailed information to guide building design



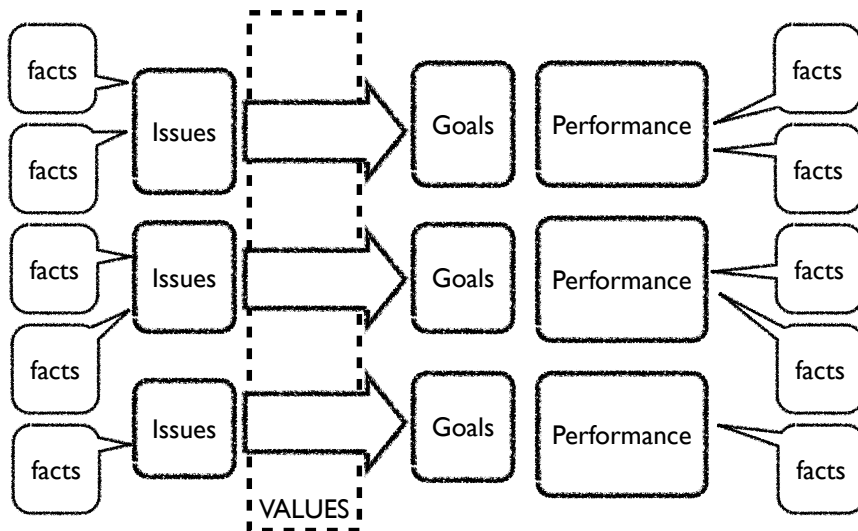
The most cost-effective time to make changes is during programming. This phase of a project is the best time for interested parties to influence the outcome of a project.

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Scheme: Design Programming

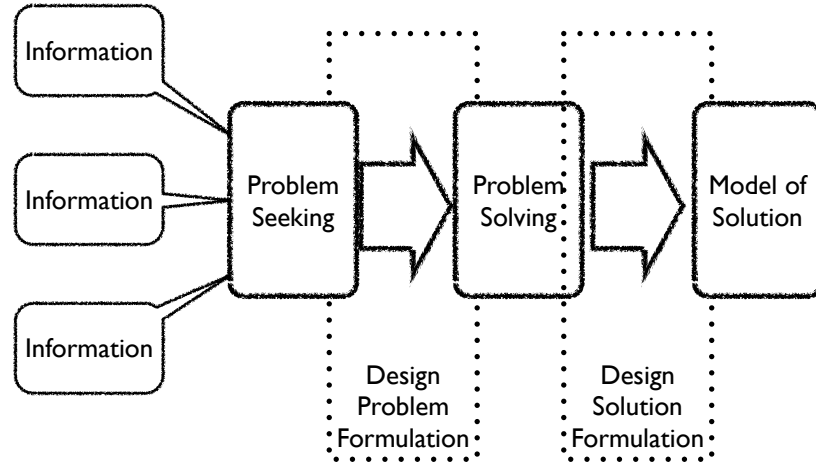
(Duerk, 1993)



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Scheme: Design Process as Problem Solving

(William Peña, 2001)



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William Peña Matrix of Problem Seeking		Goals	Facts	Concepts	Needs	Problems
Function	<ul style="list-style-type: none"> • People • Activities • Relations 					
Form	<ul style="list-style-type: none"> • Site • Environment • Quality 					
Economy	<ul style="list-style-type: none"> • Intake budget • Operation cost • Life-cycle cost 					
Time	<ul style="list-style-type: none"> • Past • Present • Future 					

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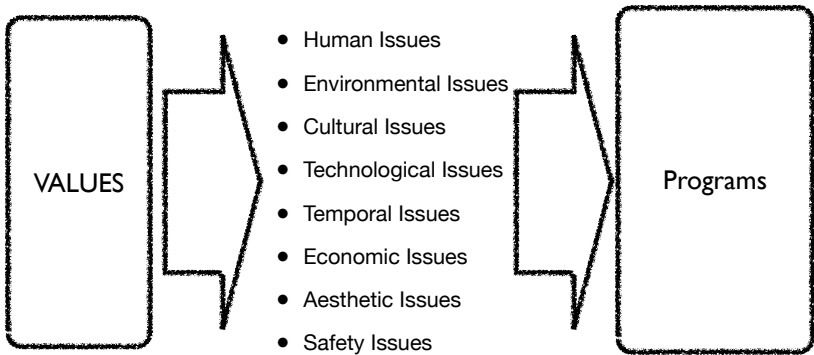
	GOALS	FACTS	CONCEPTS	NEEDS	PROBLEM
FUNCTION	LIVE = NEEDS + WANTS	\$750 CRATED UNITS - 17 STORES - 100 1 BR - 20 3 BR - 110 2 BR HIGH RISE - PARKING - 1.5/UNIT	CONVENTIONS / PARADIGMS - garden - path - gym - gathering room - kitchen PUBLIC / PRIVATE balance (Ext. / Int. units) public / private	LIVE = NEEDS + WANTS Living spaces + play spaces, access, recreation, support systems	Meet the functional needs of human living as well as the recalled desires in a way that integrates public and private life to create a comfortable citizens of an URBAN VILLAGE.
FORM	An extension of the site goals... UPWARD, INTEGRATED, DIVERSE, ANTICIPATION & SURPRISE, ATTUN TO DETAIL, TEXTURE, HUMAN SCALED	CONFORM W/ SITE PLAN PRINCIPLES ZONING / BUILDING CODES ↳ TYPE I CONDO. Conform to site quality goals	Extend site circ. paths into bldg. and integrate! Integrate w/ place Public/private balance Integrate public / private "SUSTAINABLE"	Fit w/ SITE, context Condominium ↳ ownership ↳ quality, performance	Extend the site plan policies and goals into a set of spaces that fills (mostly) residential desires in an URBAN VILLAGE in a way that integrates with the surrounding village without sacrificing an individual identity.
ECONOMY	Perseverance & options will lead to an acceptable overall price for construction "SUSTAINABLE" ↳ LIFE CYCLE COSTING	Market rates very high for significant bldgs → "the demand"	"Sustainable" life cycle costing still will be profitable A "living" bldg will contribute to its own operating costs	Must meet market price to be sold. Life cycle costing is needed to confirm w/ sustainability goals of a bldg.	An architecturally pleasing design will create demand. Perseverance & options will lead to an acceptable overall cost.
TIME	PERMANENCE ADAPTABILITY	Code producers are in it for a longer term than residents	Connect with past by continuing site design system	Familiarity w/ Originality Historic yet anticipatory responses	Explore historic urban qualities with a contemporary language that also enables permanence and adaptability for the future.

https://wiki.ucfilespace.uc.edu/groups/retelc09a_32artn522001/wiki/4c1cd/phase_III_a_conceptual_analysisprogrambubble_diagrams.html

Matrix of Information (William Palmer, 1981)	Ascertainments	Predictions	Recommendation
	(information what we have known)	(information what we predict to come)	(information formulated for necessary design)
human factor			
physical factors			
external factors			

Information needed for architectural programming ...

... HECTTEASTEST EACH ...



Architectural Programming and Predesign Manager
Robert G. Hershberger (1999)

Information needed for architectural programming ...

Matrix of Program (Hersberger)	Issues				
	test	test	test	test	test
Human	Functional	Social	Physical	Physiological	Psychological
Environment	Site	Climate	Context	Resources	Waste
Cultural	Historical	Institutional	Political	Legal	
Technological	Materials	Systems	Design Processes	Construction process	
Temporal	Temporal	Growth (expansion or contraction)	Change	Permanence	
Economy	Finance	Construction	Operations	Maintenance	Energy
Aesthetic	Form	Space	Color	Meaning	
Safety	Structural	Fire	Chemical	Personal	Criminal

Architectural Programming and Predesign Manager
Robert G. Hershberger (1999)

Matrix of Program (Hersberger)	Needs	Goal	Requirements
Human			
Environment			
Cultural			
Technological			
Temporal			
Economy			
Aesthetic			
Safety			

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Information needed for architectural programming ...

... space ...

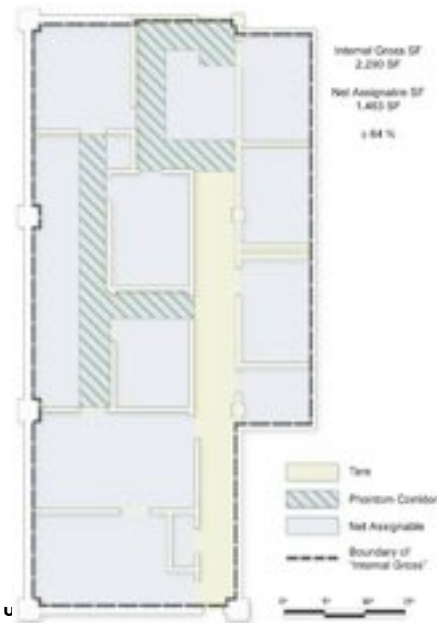
- The types of spaces frequently included in the building type,
- The space criteria (number of square feet per person or unit) for those spaces,
- Typical relationships of spaces for these functions,
- Typical ratios of net assignable square footage (NASF—areas that are assigned to a function) to gross square footage (GSF—total area to the outside walls) for this building type,
- Typical costs per square foot for this building type,
- Typical site requirements for the project type,
- Regional issues that might alter the accuracy of the data above in the case of this project, and
- Technical, mechanical, electrical, security, or other issues unique to the project type.

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Information needed for architectural programming ...

... space ...



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Information needed for architectural programming ...

... other ...

Facility users, activities, and schedules information

Who is doing what, how many people are doing each activity, and when are they doing it?

What equipment is necessary for activities to function properly? What is the size of the equipment?

What aspects of the project need to be projected into the future? What is the history of growth of each aspect that requires projection?

What are the space criteria (square feet per person or unit) for the functions to take place?

What other design criteria may affect architectural programming: access to daylight, acoustics, accessibility, campus/area design guidelines, historic preservation, etc.?

Are there licensing or policy standards for minimum area for various functions? What are these standards?

What are the energy usage and requirements?

What code information may affect programming decisions?

Site information

the site is always a major aspect of the design problem and therefore should be included in the program. Site analysis components that often affect design include:

Legal description

Zoning, design guidelines, and deed restrictions and requirements

Traffic (bus, automobile, and pedestrian) considerations

Utility availability (a potentially high cost item)

Topography

Views

Built features

Climate (if not familiar to the designer)

Vegetation and wildlife

Client's existing facility as a resource

If the client is already participating in the activities to be housed in the new facility, it may be possible to make use of information at hand. Determine if the existing facility is satisfactory or obsolete as a resource.

If a floor plan exists, do a square foot take-off of the areas for various functions. Determine the building efficiency (the ratio of existing net-to-gross area). This ratio is useful in establishing the building efficiency target for the new facility.

If the client is a repeat builder (school districts, public library, public office building, etc.), obtain plans and do area take-offs; determine typical building efficiencies.

Use the existing square footages for comparison when you propose future amounts of space. People can relate to what they already have. (See illustration above in Step 5, Determine quantitative requirements.)

further references

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